1. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to 9^-} \frac{7}{(x-9)^7} + 3$$

A. ∞

B. $-\infty$

C. $f(9)$

D. The limit does not exist

E. None of the above

2. Evaluate the limit below, if possible.
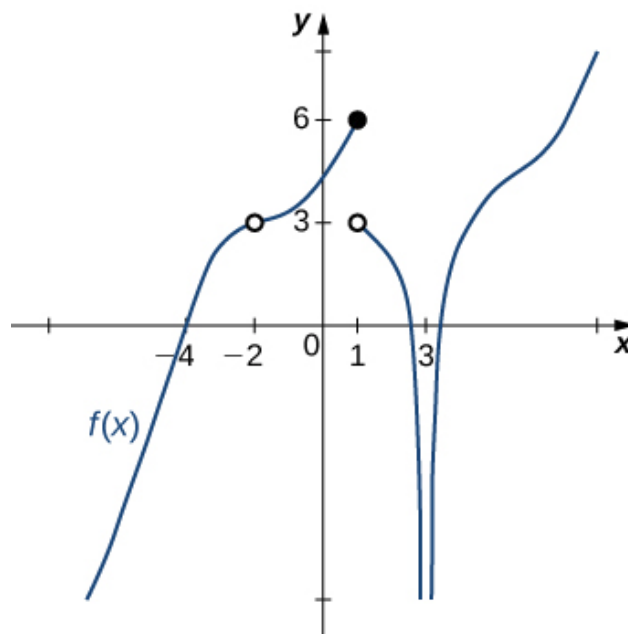
$$\lim_{x \to 9} \frac{\sqrt{4x - 20} - 4}{5x - 45}$$

A. ∞

B. 0.125

C. 0.025

D. 0.100

E. None of the above

3. Based on the information below, which of the following statements is always true?

As x approaches 7, f(x) approaches 8.652.

A. $f(7)$ is close to or exactly 8

B. $f(8)$ is close to or exactly 7

C. $f(7) = 8$

D. $f(8) = 7$

E. None of the above are always true.

4. For the graph below, evaluate the limit: $\lim\limits_{x \to -4} f(x)$.

    A. -6

    B. $-\infty$

    C. 0

    D. The limit does not exist

    E. None of the above

5. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to -6^-} \frac{4}{(x+6)^4} + 2$$

    A. $f(-6)$

    B. $-\infty$

    C. ∞

    D. The limit does not exist

    E. None of the above

6. To estimate the one-sided limit of the function below as x approaches 5 from the right, which of the following sets of numbers should you use?

$$\frac{\frac{5}{x} - 1}{x - 5}$$

A. $\{4.9000, 4.9900, 4.9990, 4.9999\}$

B. $\{4.9000, 4.9900, 5.0100, 5.1000\}$

C. $\{5.1000, 5.0100, 5.0010, 5.0001\}$

D. $\{5.0000, 5.1000, 5.0100, 5.0010\}$

E. $\{5.0000, 4.9000, 4.9900, 4.9990\}$

7. Evaluate the limit below, if possible.

$$\lim_{x \to 4} \frac{\sqrt{9x - 11} - 5}{8x - 32}$$

A. 0.100

B. 0.375

C. 0.013

D. ∞

E. None of the above

8. Based on the information below, which of the following statements is always true?

As x approaches 7, $f(x)$ approaches ∞.

A. $f(x)$ is close to or exactly ∞ when x is large enough.

B. $f(x)$ is undefined when x is close to or exactly 7.

C. x is undefined when $f(x)$ is close to or exactly ∞.

D. $f(x)$ is close to or exactly 7 when x is large enough.

E. None of the above are always true.

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9. To estimate the one-sided limit of the function below as x approaches 9 from the right, which of the following sets of numbers should you use?

$$\frac{\frac{9}{x} - 1}{x - 9}$$

A. $\{8.9000, 8.9900, 9.0100, 9.1000\}$

B. $\{8.9000, 8.9900, 8.9990, 8.9999\}$

C. $\{9.0000, 8.9000, 8.9900, 8.9990\}$

D. $\{9.0000, 9.1000, 9.0100, 9.0010\}$

E. $\{9.1000, 9.0100, 9.0010, 9.0001\}$

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10. For the graph below, find the value(s) a that makes the statement true: $\lim_{x \to a} f(x) = 3$.
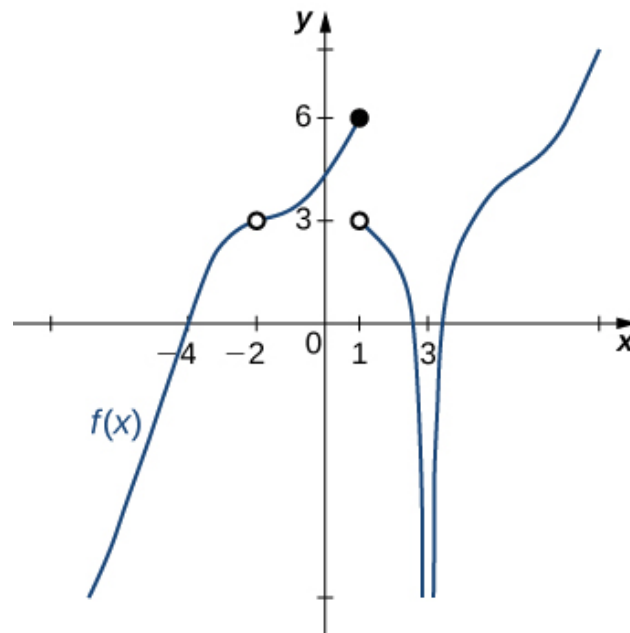
A. -2

B. $-\infty$

C. 1

D. Multiple a make the statement true.

E. No a make the statement true.

---

11. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to 1^-} \frac{7}{(x+1)^8} + 9$$

A. ∞

B. $-\infty$

C. $f(1)$

D. The limit does not exist

E. None of the above

---

12. Evaluate the limit below, if possible.

$$\lim_{x \to 7} \frac{\sqrt{9x - 38} - 5}{2x - 14}$$

A. 0.450

B. 0.100

C. 0.050

D. ∞
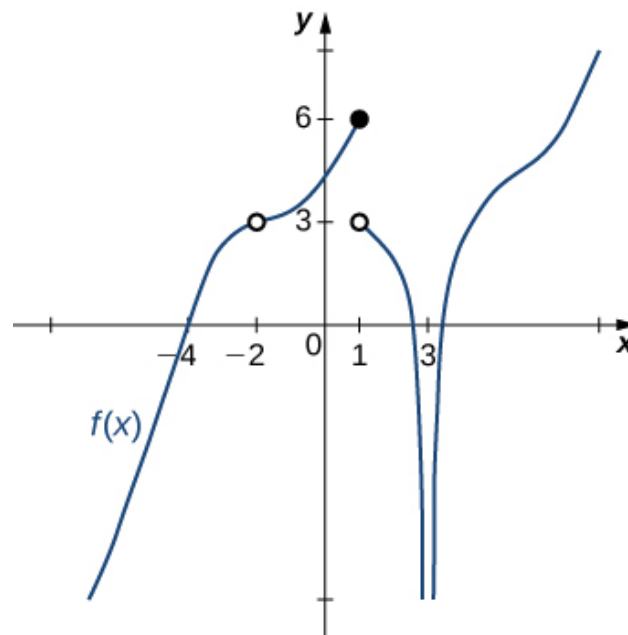
E. None of the above

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13. Based on the information below, which of the following statements is always true?

f(x) approaches 5.689 *as x approaches* ∞.

A. $f(x)$ is close to or exactly ∞ when x is large enough.

B. x is undefined when $f(x)$ is large enough.

C. $f(x)$ is undefined when x is large enough.

D. $f(x)$ is close to or exactly 5.689 when x is large enough.

E. None of the above are always true.

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14. For the graph below, find the value(s) a that makes the statement true: $\lim_{x \to a} f(x) = 3$.

A. -2

B. 1

C. $-\infty$

D. Multiple a make the statement true.

E. No a make the statement true.

---

15. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to 8^-} \frac{-8}{(x - 8)^3} + 5$$

A. $-\infty$

B. ∞

C. $f(8)$

D. The limit does not exist

E. None of the above

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16. To estimate the one-sided limit of the function below as x approaches 9 from the right, which of the following sets of numbers should you use?

$$\frac{\frac{9}{x} - 1}{x - 9}$$

A. $\{8.9000, 8.9900, 8.9990, 8.9999\}$

B. $\{8.9000, 8.9900, 9.0100, 9.1000\}$

C. $\{9.0000, 9.1000, 9.0100, 9.0010\}$

D. $\{9.0000, 8.9000, 8.9900, 8.9990\}$

E. $\{9.1000, 9.0100, 9.0010, 9.0001\}$

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17. Evaluate the limit below, if possible.

$$\lim_{x \to 7} \frac{\sqrt{5x - 10} - 5}{4x - 28}$$

A. 0.559

B. 0.025

C. 0.100

D. ∞

E. None of the above

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18. Based on the information below, which of the following statements is always true?

f(x) approaches 8.878 *as x approaches* 0.

A. $f(x)$ is close to or exactly 8.878 when x is close to 0

B. $f(x)$ is close to or exactly 0 when x is close to 8.878

C. $f(x) = 0$ when x is close to 8.878

D. $f(x) = 8.878$ when x is close to 0

E. None of the above are always true.

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19. To estimate the one-sided limit of the function below as x approaches 3 from the left, which of the following sets of numbers should you use?

$$\frac{\frac{3}{x} - 1}{x - 3}$$

A. $\{2.9000, 2.9900, 3.0100, 3.1000\}$

B. $\{3.0000, 3.1000, 3.0100, 3.0010\}$

C. $\{2.9000, 2.9900, 2.9990, 2.9999\}$

D. $\{3.0000, 2.9000, 2.9900, 2.9990\}$

E. $\{3.1000, 3.0100, 3.0010, 3.0001\}$

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20. For the graph below, find the value(s) a that makes the statement true: $\lim_{x \to a} f(x)$ does not exist.

A. -2

B. 3

C. 1
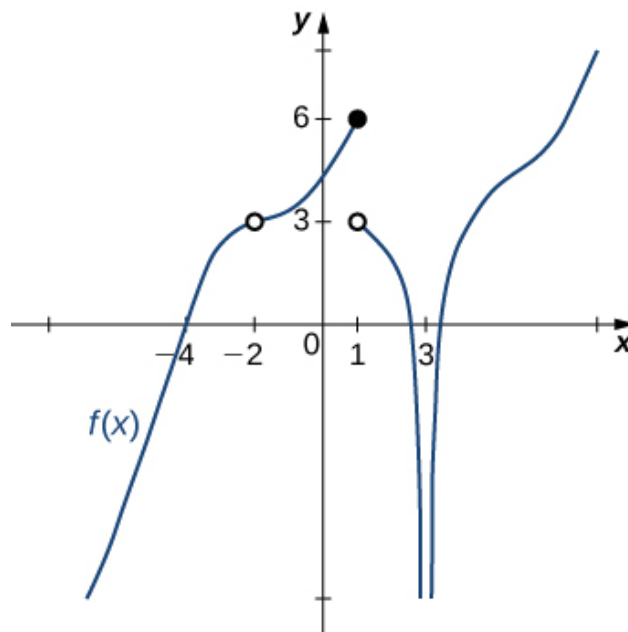
D. Multiple a make the statement true.

E. No a make the statement true.

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21. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to -6^-} \frac{-4}{(x+6)^5} + 4$$

A. ∞

B. $f(-6)$

C. $-\infty$

D. The limit does not exist

E. None of the above

---

22. Evaluate the limit below, if possible.

$$\lim_{x \to 9} \frac{\sqrt{6x - 18} - 6}{4x - 36}$$

   A. 0.083

   B. 0.125

   C. 0.612

   D. ∞

   E. None of the above

23. Based on the information below, which of the following statements is always true?

   As x approaches 8, f(x) approaches 16.975.

   A. $f(16) = 8$

   B. $f(8) = 16$

   C. $f(16)$ is close to or exactly 8

   D. $f(8)$ is close to or exactly 16

   E. None of the above are always true.

24. For the graph below, find the value(s) a that makes the statement true:
   $\lim_{x \to a} f(x)$ does not exist.

A. -2

B. 3

C. 1
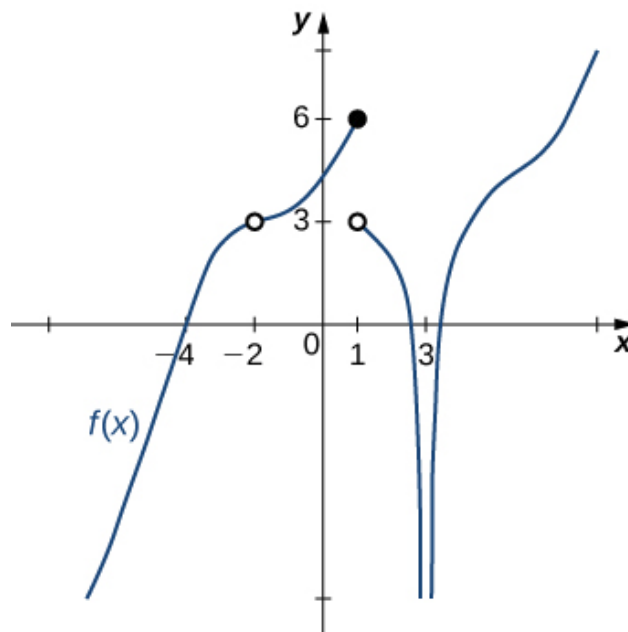
D. Multiple a make the statement true.

E. No a make the statement true.

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25. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x \to -7^+} \frac{-2}{(x-7)^9} + 8$$

A. ∞

B. $f(-7)$

C. $-\infty$

D. The limit does not exist

E. None of the above

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26. To estimate the one-sided limit of the function below as x approaches 10 from the left, which of the following sets of numbers should you use?

$$\frac{\frac{10}{x} - 1}{x - 10}$$

   A. $\{10.0000, 9.9000, 9.9900, 9.9990\}$

   B. $\{9.9000, 9.9900, 9.9990, 9.9999\}$

   C. $\{10.0000, 10.1000, 10.0100, 10.0010\}$

   D. $\{9.9000, 9.9900, 10.0100, 10.1000\}$

   E. $\{10.1000, 10.0100, 10.0010, 10.0001\}$

27. Evaluate the limit below, if possible.

$$\lim_{x \to 5} \frac{\sqrt{9x - 29} - 4}{6x - 30}$$

   A. ∞

   B. 0.021

   C. 0.188

   D. 0.125

   E. None of the above

28. Based on the information below, which of the following statements is always true?

 $f(x)$ *approaches* 0.883 *as* x *approaches* 4.

   A. $f(x)$ is close to or exactly 0.883 when x is close to 4

   B. $f(x)$ is close to or exactly 4 when x is close to 0.883

   C. $f(x) = 0.883$ when x is close to 4

   D. $f(x) = 4$ when x is close to 0.883

   E. None of the above are always true.

29. To estimate the one-sided limit of the function below as x approaches 2 from the left, which of the following sets of numbers should you use?

$$\frac{\frac{2}{x} - 1}{x - 2}$$

   A. $\{1.9000, 1.9900, 1.9990, 1.9999\}$

   B. $\{2.1000, 2.0100, 2.0010, 2.0001\}$

   C. $\{2.0000, 1.9000, 1.9900, 1.9990\}$

   D. $\{2.0000, 2.1000, 2.0100, 2.0010\}$

   E. $\{1.9000, 1.9900, 2.0100, 2.1000\}$

30. For the graph below, find the value(s) a that makes the statement true: $\lim_{x \to a} f(x)$ does not exist.
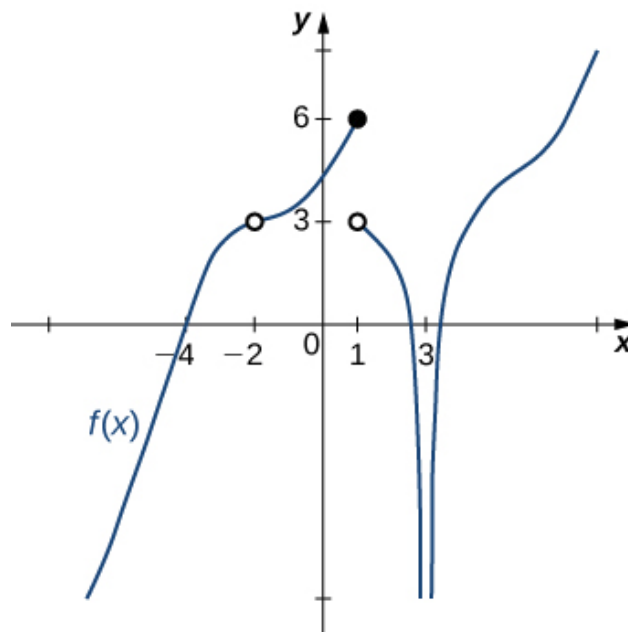
   A. 1

   B. -2

   C. 3

D. Multiple a make the statement true.

E. No a make the statement true.